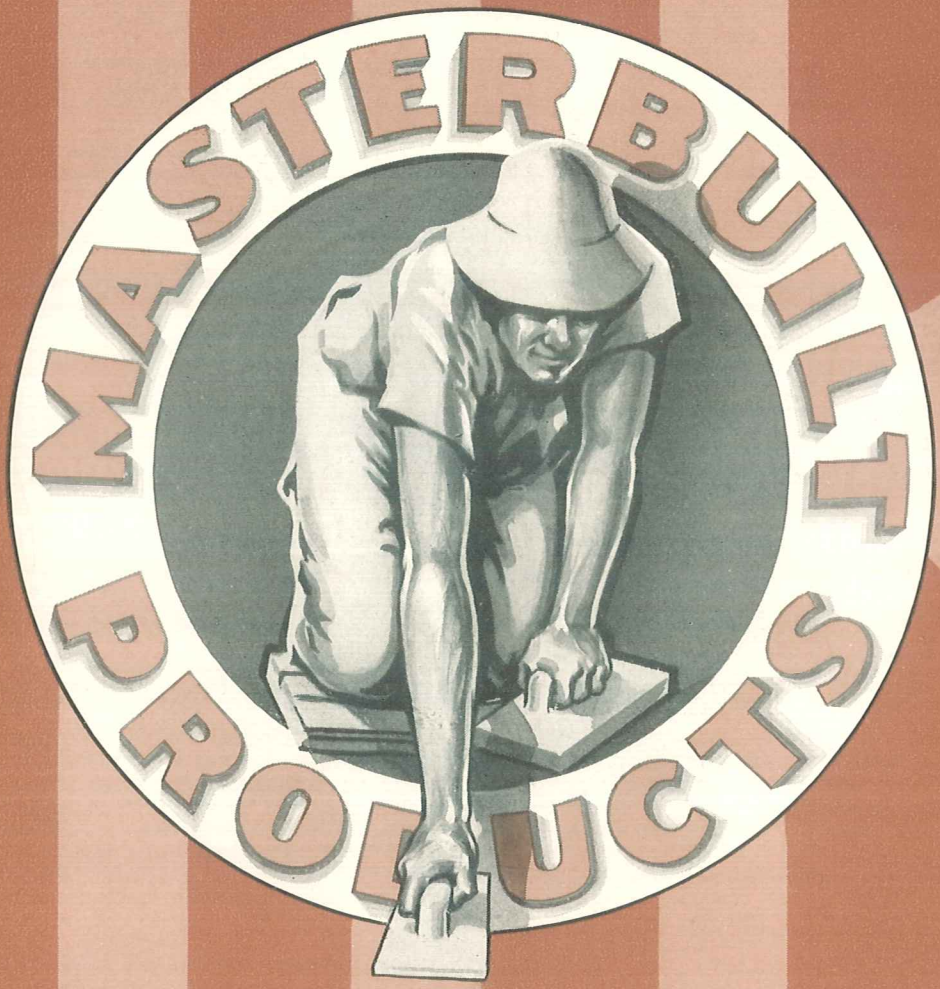


the MASTER BUILDERS Co

CLEVELAND 3, OHIO

TORONTO, ONTARIO

INDEX

*Products employing Cement Dispersion, which reduces water-cement ratio 15% and increases efficiency of cement.

Research in the Laboratory

FOR 40 years Master Builders have been working continuously to improve concrete and mortar. In field studies and laboratory investigations they have made valuable discoveries in and contributions to concrete workability, strength, permeability, durability and economy.

This research has produced Cement Dispersion, which improves all concrete and mortar properties, Masterplate, which makes long-life, spark-resisting static disseminating floors, and Embeco, which provides non-shrink concrete for grouting and reintegration.

Another important laboratory function is accurate control of manufacturing. This control insures uniform job results with Master Builders' products.

FIELD SERVICE

Job problems submitted to Master Builders' field engineers, who are located in all principal cities, constitute an important phase of the laboratory's continuing program of field service and research.

Much of the data resulting from this research work has been published in the following research papers. Copies of these papers, listed below, are available on request without cost.

RESEARCH PAPERS

No. 35—"Application of the Principle of Dispersion to Portland Cement."

No. 36—"Economics of Cement Dispersion."

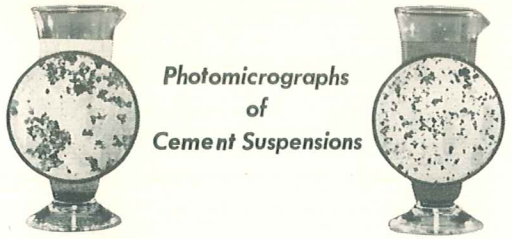
No. 37—"Relation of Dispersion to Special Cements."

No. 38—"Cement Dispersion and Admixtures."

No. 39—"Cement Dispersion and Air Entrainment."

No. 40—"Cement Dispersion and Concrete Floors."

No. E-2—"The Action of Embeco in Concrete and Mortars."



Photomicrographs of Cement Suspensions

FLOCCULATED **DISPERSED**

CEMENT DISPERSION

(Left)—Showing how cement particles clump together or flocculate when placed in water.

(Right)—The cement dispersing agent calcium lignosulfonate causes the particles to separate by imparting to them like electrostatic charges. Dispersion of the cement particles produces these important effects: the water which had been trapped within the particle clumps is released to become a part of the mixing or placing water; the surface area in contact with the water is greatly increased since the particles are no longer in contact with each other. A certain amount of additional air is entrained. By these means the cement is more effectively used to produce concrete and mortar of improved properties.

CEMENT DISPERSION

Produces these Fundamental Improvements

1. **Great Durability**—Decreased permeability and higher strength cement paste, resulting from cement dispersion, minimize the effects of freezing and thawing. Reduced permeability lessens the effects of corrosive solutions.
2. **Higher Strength**—Through reduction of the water-cement ratio, and more rapid hydration, cement dispersion produces higher early and ultimate strength.
3. **Permeability**—Greatly improved through reduction in permeability and freedom from cracks and gross defects.
4. **Volume Change**—Reduction in volume of water required with a dispersing agent lessens volume of the cement paste, reducing volume change or shrinkage.
5. **Uniformity**—Improved texture and freedom from gross defects results in greater uniformity and improved appearance.

ECONOMIC SIGNIFICANCE

Cement Dispersion by permitting reduction of the water-cement ratio and exposing the full surface area of cement particles, increases compressive strength 25% or more.

Inasmuch as the requirements of design and of specifications are based on strength, concrete and mortar mixes employing cement dispersion take full practical advantage of the potential value of cement and hence are far more economical in initial and long-term cost.

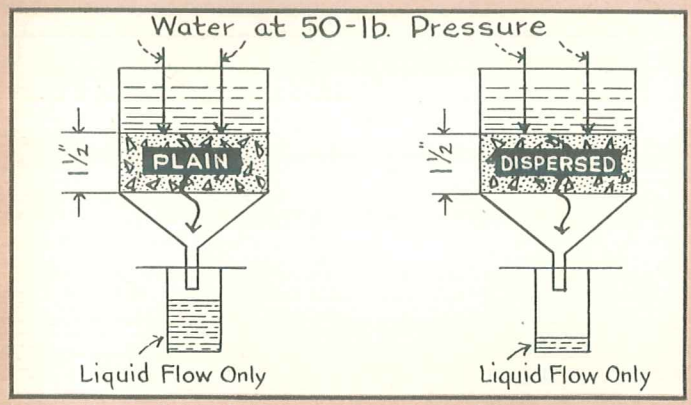
POZZOLITH FOR BETTER

WORKABILITY

Pozzolith Produces Greater Workability With Less Water

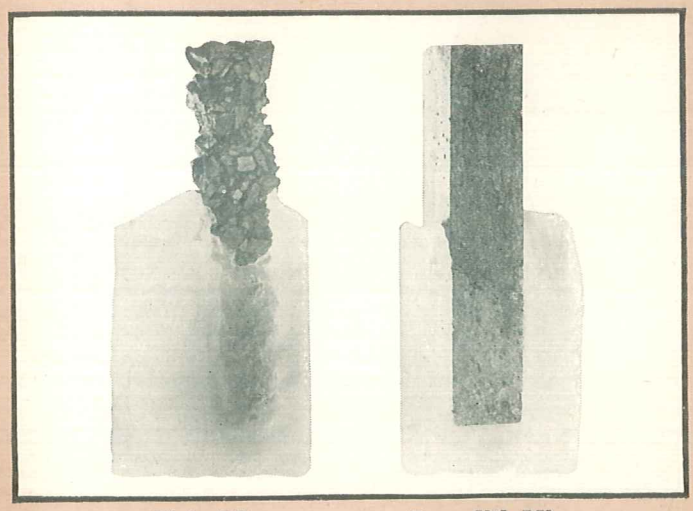
Plain Mix		Pozzolith Mix
6¾ gallons	W/C	5⅝ gallons
1¾ inches	SLUMP	2½ inches

WATER PENETRATION



In tests by Prof. W. M. Dunagan, Iowa State College, Pozzolith produced 45% less permeability. (Proc. ASTM Vol. 39, 1939, pages 866-880.)

DURABILITY



Plain Mix **Pozzolith Mix**

In other freezing and thawing tests by National Bureau of Standards, Pozzolith increased durability over 400%.

Pozzolith improves the four essential qualities of concrete. It is the only concrete treatment that produces the important combination of: Increased Durability, Minimum Shrinkage, Maximum Strength and Maximum Economy because only Pozzolith's cement dispersion—

"puts all of the cement to work,"
gives optimum air content,
cuts water-cement ratio 15% and
complies with the water-cement ratio law.

Advantages of Pozzolith

FIRST, POZZOLITH PRODUCES BETTER, MORE DURABLE CONCRETE because it—

1. Reduces water-cement ratio up to 15%*.
2. Increases strength up to 25%*.
3. Reduces segregation; reduces bleeding up to 60%*.
4. Decreases permeability 20% or more.†
5. Increases resistance to freezing and thawing up to 500%*, with higher corrosion resistance.
6. Avoids excess cement content and excess heat and reduces shrinkage and cracks to minimum.

SECOND,

Normal concrete of *any given quality* is produced at lower cost with Pozzolith than by any other means. Pozzolith reduces costs through—

1. Lower materials-cost, because dispersed cement produces substantially higher strengths.
2. Lower labor costs, because of increased workability, easier placeability and less finishing time.
3. Lower maintenance costs, because of increased resistance to freezing and thawing and corrosion.

*War Department Report from the National Bureau of Standards.

†Tests by Prof. W. M. Dunagan, Iowa State College. (Proc. ASTM Vol. 39, 1939, pages 866-880.)

Dallas Morning News, Dallas, Texas. Archt.—George L. Dahl, Dallas; Consulting Engr.—William Ginsberg, New York City; Structural Engr.—Robert L. Rolfe, Dallas; Contr.—Henry C. Beck Company, Dallas. Pozzolith Ready-Mixed Concrete supplied by Dallas Concrete Company, Dallas.

MORE ECONOMICAL CONCRETE

High Early Pozzolith provides all the advantages of Standard Pozzolith, plus high early strengths; i.e., normal 3 day strength in 1 day, normal 7 day strength in 3 days, normal 28 day strength in 7 days.

When used for winter construction, High Early Pozzolith used with regular portland cement, reduces the period of heat protection 50% or more.

Conforms with ACI and ASTM Procedures

Authoritative methods for concrete design, specification and production are ACI (613-44) and ASTM (C94-48)—both based on the water-cement ratio law. Pozzolith also conforms with the water-cement ratio law and when used with these methods produces the best, most economical results.

SPECIFICATIONS

1

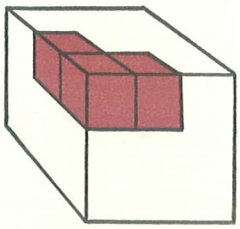
Concrete shall be designed in accordance with the ACI Standard Recommended Practice for the Design of Concrete Mixes (ACI-613-44), with normal portland cement and an approved cement dispersing agent which reduces the water required for a given consistency by not less than 10% and complies fully with the water-cement ratio law. The strengths, slumps, water-cement ratio, and top size aggregate of the different classes of concrete shall be (insert here, or) as called for on plans or elsewhere in the specifications. The concrete shall be so designed that the materials will not segregate and excessive bleeding will not occur.

2

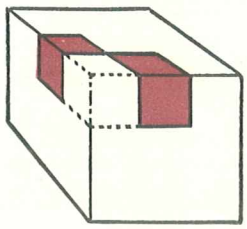
To Provide Optimum Air Content in Concrete Subject to Freezing and Thawing:

Concrete shall be designed in accordance with the ACI Standard Recommended Practice for the Design of Concrete Mixes (ACI-613-44), with normal portland cement and an approved cement dispersing agent which reduces the water required for a given consistency by not less than 10% and complies fully with the water-cement ratio law. The strengths, slumps, water-cement ratio, and top size aggregate of the different classes of concrete shall be as called for on plans or elsewhere in the specifications. All exposed concrete shall contain not less than 3% nor more than 5% total air, by volume, as determined by direct measurement or in accordance with ASTM Method C-138-44. The increased air content shall be obtained by adding at the mixer an air entraining agent which complies with the water-cement ratio law.

Here's Why POZZOLITH Produces Greater Workability, Water-Resistance, Durability and Economy



PLAIN CONCRETE



POZZOLITH CONCRETE

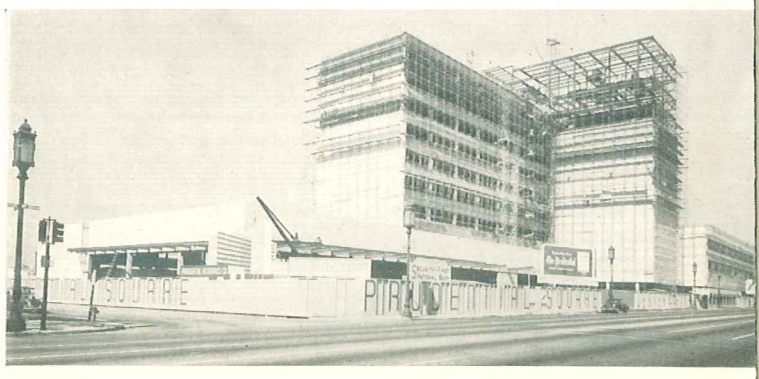
Only about two gallons of water are required to hydrate each sack of cement in a concrete mix.

Balance of water is used to make mix easy to work and place—3-4 gallons in conventional mixes. During curing and drying out this mixing and placing water is lost, causing the concrete to shrink.

Above left illustration shows the space occupied by this water if it were concentrated in one area, instead of being distributed throughout the mass in the form of voids, pores and shrinkage cracks.

Above right illustration shows the amount of this water in Pozzolith Concrete—one-third less than in plain concrete.

RESULTS—equal or better placeability, lower permeability, greater durability, and economy . . . because Pozzolith, Cement Dispersion, increases the effectiveness of both cement and water in a concrete mix and complies with water-cement ratio law.



Prudential Insurance Co., Los Angeles, Calif. One of several outstanding structures built with lightweight aggregate Pozzolith concrete. Archts.—Walter Wurdeman and Welton Becket; Engrs.—Murray Erick Associates; Gen. Contr.—William Simpson Co., all of Los Angeles, Calif.

"O.M."—FOR WATER-MASONRY

Cement Dispersing Agent for Masonry Mortars

"O.M."—Less Shrinkage, More Durability and Economy

One of the most valuable applications of Cement Dispersion is its use in Masonry Mortars, where it not only attacks the principal causes of leakage, but where it effects immediate savings in initial costs.

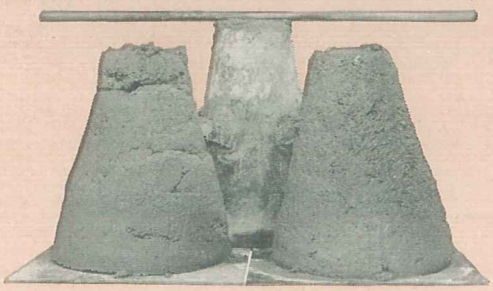
As formulated for mortar, it is named Omicron Mortarproofing or "O.M." In standard Master Builders' "O.M.", the dispersing agent is combined with a pozzuolanic plasticizer, and water repellent stearate, which results in minimum absorption. "O.M." is a light grey powder, which is added at the mortar box or mixer.

In addition to its neutral shade, "O.M." is made in five non-fading colors for mortars and stucco: Chocolate, Buff "A," Buff "C, "Red "A," Red "C."

BRIKRON

BRIKRON differs from "O.M." in that it includes no stearate. Like "O.M.", it checks shrinkage cracks, increases bond strength, improves workability and increases durability.

"O.M." PRODUCES IDEAL WORKABILITY WITH LESS WATER, REDUCED WATER CUTS SHRINKAGE



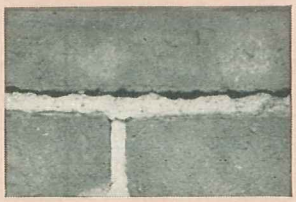
Shows Equal Workability with "O.M." Using 15% Less Water

Both Mixes—1 Cement: 1 Lime Putty: 6 Sand

Plain Mix		"O.M." Mix
6.0 gal.	w/c.	5.1 gal.
2"	slump.	2"

"O.M." THUS REDUCES BY 30-50% INITIAL SHRINKAGE

which Breaks Bond At This Point ➡ And Is The Major Cause of Leaks



OMICRON MORTARPROOFING

Cause of Leaky Walls—

The mere use of water repellents in mortar will not solve the problem of leaky walls because tests show it's not the *absorbency* of mortar, but the *cracks* between mortar and brick which are the principal cause of leaks.

Why "O. M." Controls Mortar Shrinkage—

Only about 2 gallons of water are required to hydrate each sack of cement in a mortar mix. Balance of water is used to produce workability—3-4 gallons in conventional mixes.

During curing, much of this "workability water" is lost, causing mortar to shrink. Since bond between mortar and brick is weak during this period, the shrinkage frequently results in cracks and leaky brickwork.

"O.M." directly attacks this problem by (1) producing ideal workability with about one-third less "workability water." This reduces initial shrinkage 30-40%*, or generally below the point at which the bond is broken (2) increasing bond strength on the average 15%*; compressive strength 10%* (3) lowering mortar porosity and reducing absorption 40% or more (4) increasing water retentivity which minimizes need for retempering and retards loss of water. (*From Columbia University Test Nos. 2356-57.)

Cuts Costs—

"O.M." reduces *initial* costs by use of additional sand to produce 15-20% more mortar; reduces *maintenance* costs by overcoming problem of costly and untimely repairs.

Improves Quality, Quantity, of Work—

"O.M." produces a fatty, cohesive mortar which retains its plasticity longer, spreads easier and farther, and clings and slushes better. "O.M." is equally effective with masonry cement mortars.

Schuster's Stores Warehouse, Milwaukee, Wis. Archt.—Brust and Brust, Milwaukee; Gen. Contr.—Selzer-Ornst Co., Milwaukee.

RESISTANT, DURABLE MORTAR

"O.M." For Glass Block—To meet the requirements of glass block construction a mortar should *first,* bond well to the blocks, *second,* hold blocks in place and prevent them from sliding. Because of its exceptional plasticity and cohesiveness, "O.M." meets these qualifications. In addition, "O.M." helps prevent leaky glass walls by developing strength rapidly, which, with greatly reduced shrinkage, preserves the mortar bond.

It is highly important that the bond be preserved in glass block construction because there is no "back up" to prevent water seeping through the wall to the interior of the building.

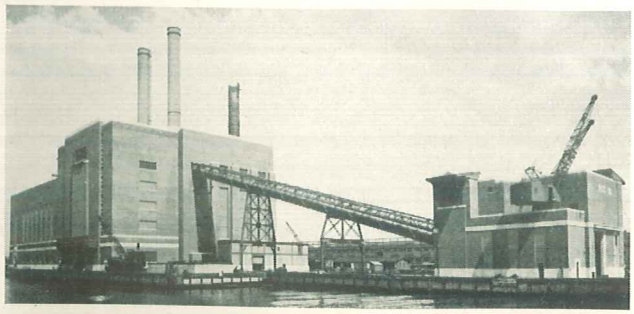
For Stucco—"O.M." is widely used in stucco to control shrinkage and cracking, to produce better workability and impermeability. (Pictorial directions for use on request.)

SPECIFICATIONS

Mortar for all Masonry or Plaster shall be composed of (designate mix) to which shall be added MASTER BUILDERS CO. "O.M." in the proportions of 1 lb. per each sack of portland or masonry cement and 1 lb. for each cubic foot of lime (hydrated or lime putty) in mix in exact accordance with the directions of the manufacturer.

Mortar for Glass Block—shall consist of 1 part portland cement; ½ part hydrated lime or lime putty; 4½ parts of well graded sand and 1 lb. of "O.M." for each cubic foot of cement and lime in the batch.

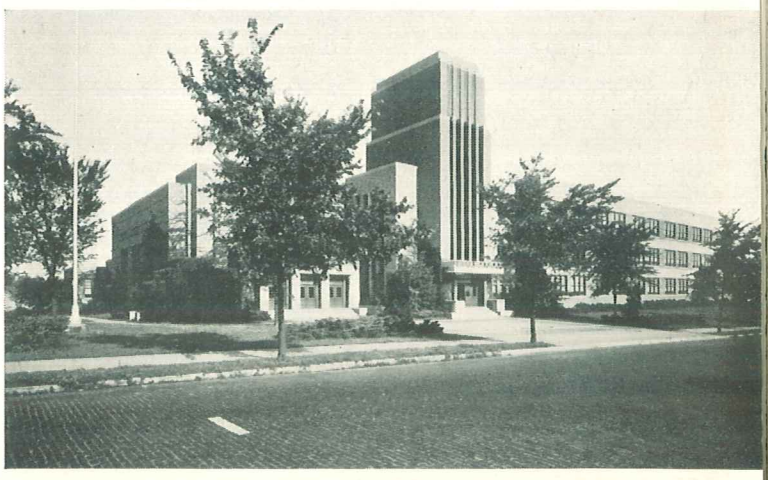
Master Builders BRIKRON—shall be added to mortar for all masonry in the proportion of ½ lb. to each sack (cu. ft.) of cement and ½ lb. to each cubic foot of lime (hydrated or putty) in the mix.



Philadelphia Electric Co., Southwork Station, Philadelphia, Pa. Designed by owner's engineering dept., with Paul Cret Associates, Consultants. Gen. Archt.—United Engineers & Constructors, Inc., Philadelphia.

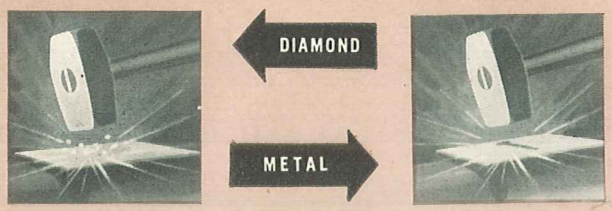
Edward S. Harkness Memorial Hospital, New York City. Archt.—Voorhees, Walker, Foley & Smith; Contr.—Vermilya Brown Co., Inc.,—both of New York City.

Warner Bros. Distributing Corp., Minneapolis, Minn. Omicron Mortarproofing used throughout including glass block panels. Archt.—E. C. A. Bullock, New York City; Gen. Contr.—Standard Construction Corp., Minneapolis.



Sumner High School, Kansas City, Kansas. Archt.—Joseph W. Radotinsky; Engr.—Horner and Wyatt; Contr.—S. Patti Construction Co.—all of Kansas City, Kansas.

Here's Why MASTERPLATE "Iron-Clad" Concrete Floors Wear at Least 4-6 Times Longer

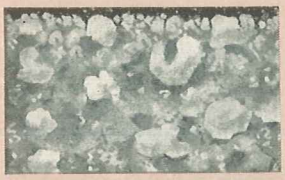


All stone—even a diamond, the hardest substance known—shatters under impact . . . iron merely spreads out, retaining its toughness and strength.

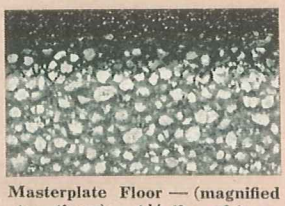
In a plain concrete floor surface all stone aggregate, no matter how hard, is brittle—even traprock, silica and emery—and fractures under impact and abrasion. But in a Masterplate "iron-clad" concrete floor, with its thick ductile surface, the iron aggregate merely gives under impact, producing a floor that wears at least 4-6 times longer than a plain concrete floor. (See report on tests of 138 different types of concrete floor surfaces made by National Bureau of Standards. Copy on request.)

Masterplate is metallic aggregate—tough, ductile, specially processed, size-graded iron particles—combined with an exclusive cement dispersing agent. Because of cement dispersion, the pound or more per sq. ft. of Masterplate required to produce a Masterplate floor can easily be embedded in plastic concrete and *kept at the surface,* producing an armored surface about one-eight inch thick. This assures high compressive strength and a thick ductile surface —the two basic qualities for long floor life.

Compare the thickness . . .



Ordinary Metallic Aggregate Floor—(magnified two times) 3/10-4/10 lb. per sq. ft.



Masterplate Floor — (magnified two times) — 1¼ lbs. of iron per sq. ft.

Here is a section of a Masterplate "Iron-Clad" Floor. Note the depth of armored surface—produced only with cement dispersion.

Advantages of Masterplate

Only a Masterplate "iron-clad" concrete floor provides all of the following advantages:

Wear-Resistant—Masterplate Floors wear at least 4-6 times longer than the best plain concrete floor. (See information at left.)

Spark-Safe—Plain concrete floors are often the cause of frictional or static sparks. Because of this, where there are inflammable materials or where explosive conditions exist, plain concrete floors present a serious fire and explosion hazard. Since ordinary fire insurance does not cover such explosion damage, the only protection an owner can get is what he builds in himself. A Masterplate "iron-clad" concrete floor overcomes the hazard of frictional sparks because it will not spark when struck by metal. By having the right degree of conductivity, a Masterplate Floor also overcomes the hazard of static sparks. (Full information on Masterplate spark-safe floors furnished upon request.)

Non-Dusting—Because their thick ductile surface and high strength provide great wear resistance, Masterplate Floors overcome the problem of dusting.

Corrosion Resistant—Masterplate Floors resist the attack of mineral oils, alkalies, many salts and many industrial wastes.

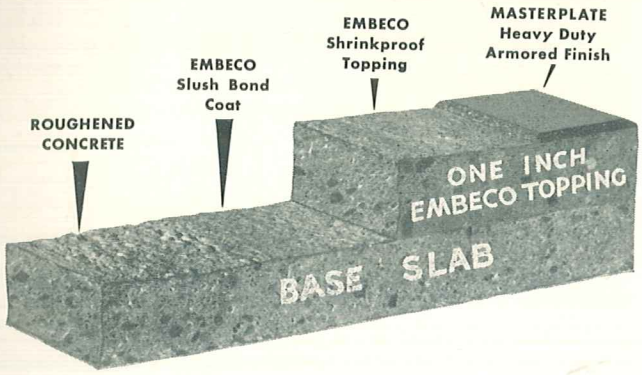
Non-Slip—A lasting non-slip surface can be produced on a Masterplate Floor by special finishing. (See specifications.)

Economical—The great wear resistance of a Masterplate Floor, at low original cost, makes it the most economical all-purpose concrete floor.

Easy to Clean—Masterplate Floors are easy to clean because the surface (1) is more than 50% less absorbent than plain concrete (2) remains smooth—free from shrinkage cracks, pit and ruts (3) is corrosion resistant. They withstand repeated steam cleaning and scrubbing with strong compounds.

Resurfacing Old Floors—Masterplate is used extensively for resurfacing, providing all the foregoing advantages.

New Masterplate Booklet—available on request; gives full information on advantages and detailed directions.



Showing use of Non-Shrink Embeco in resurfacing old concrete floors with Masterplate. (For advantages of Embeco in placing new and resurfacing old floors, see page 14.)

Specifications

All floor areas . . . (as indicated) shall be constructed and hardened with a mixture consisting of 2 parts of Masterplate and 1 part of cement by weight, using 1 to 1¼ pounds of Masterplate per square foot in strict accordance with directions furnished by the manufacturer, The Master Builders Company—Cleveland, Ohio—Toronto, Ontario.

METALICRON—METALLIC HARDNER . . . For light duty concrete floors

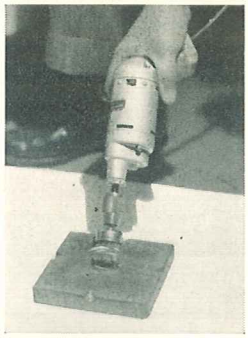
Like Masterplate, Metalicron contains Master Builders pure graded metallic aggregate combined with a pozzuolana, Omicron, but does not contain the cement dispersing agent.

Metallic Hardner is a properly graded, clean, water absorbent metal aggregate, but does not contain the pozzuolana, Omicron or Master Builders' dispersing agent. Their effective use is limited to 6/10 lb. per square foot. (Detailed directions on request.)

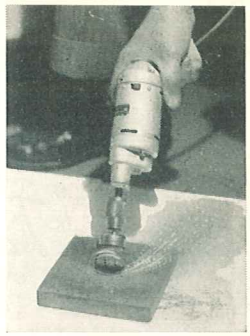
MASTERKURE . . . For curing concrete floors

MasterKure is a liquid "Membrane Curing Compound" which is applied to the concrete floor with brush or spray as soon after finishing as surface has set sufficiently to prevent injury. MasterKure provides a seal which holds the moisture in the concrete and insures proper curing. (See page 12 for further information on MasterKure.)

Masterplate floors are spark-resistant



Masterplate "Iron-Clad" Concrete Spark-resistant Floor undergoing a friction test made with rapidly rotating steel brush. No Sparks! No Dust!



Plain Concrete Floor undergoing the same friction test, made with same rapidly rotating steel brush. Sparks and Dust!

International Harvester Co., Baltimore Parts Depot, Baltimore, Maryland, in which is installed 156,000 sq. ft. of Masterplate Floors. Floor Contr.—Ce-Mas-Co. Floor Co., Chicago.

Byron-Jackson Factory, Los Angeles, Calif. Masterplate provides easy-to-clean, long-wearing floor surface. Archt. & Engr.—Ellis Wing Taylor; Contr.—C. L. Peck, both of Los Angeles.

MASTERPLATE COLORED.

COLORED MASTERPLATE

FOR INTEGRALLY COLORING AND HARDENING CONCRETE FLOORS

NILE GREEN

FRENCH GREY

TAN

TILE RED

MAROON

DARTMOUTH GREEN

TERRA COTTA

SEAL BROWN

BATTLESHIP GREY

PERSIAN RED

Also available in Black

Color shades shown subject to slight variations with different brands of cements and aggregates.

Colored Masterplate is metallic aggregate—tough, ductile, specially processed, size-graded iron particles—combined with an exclusive cement dispersing agent and stable superfine oxides. Embedded in plastic concrete and *kept at the surface,* it produces a built-in wearing surface of deep, uniform color, highly resistant to wear. Where enhanced color tone is desired in the light colored finishes a non-ferrous, tough, wear resisting, properly graded aggregate is employed. This applies to Nile Green, French Grey and Tan Masterplate.

Colored Masterplate is recommended for use either in two-course finish or where topping is omitted and base finished off as a wearing surface (monolithic).

The variety of pleasing colors available with Masterplate enables the architect to fit this long-life, economical floor into modern color schemes. Colored Masterplate floors not only contribute to an attractive and restful environment but help promote safety when used in plants for aisles and areas that should be specially marked.

Here is a section of a Colored Masterplate Floor. This "built in" colored iron-concrete surface assures many years' satisfactory service.

COLORED MASTERPLATE

Millions of square feet of Colored Masterplate Floors are in use today and giving excellent service. An important factor in their wide application has been a growing understanding of *color dynamics.* Color helps workers' morale and lessens fatigue. It is also used as a *safety* measure in making machinery easier to see—and in marking off danger areas.

Colored Masterplate possesses all the characteristics of the Non-Colored Masterplate, plus the addition of attractive colors.

Advantages of Colored Masterplate Floors.

1. Cost less than keeping floor painted—eliminate inconvenience and costly interruptions of re-painting peeling and worn off floors.
2. "Built-in" warmth and beauty of colored tile* for little more than the cost of a plain concrete floor.
3. At least four to six times more wear resistant than the best plain concrete floor.
4. Uniform clear color, extending throughout the depth of the iron surface . . . lasts the life of the floor.
5. The metallic aggregate in a Colored Masterplate Floor is ductile and "gives" under traffic—this property counteracts dusting and eventual pitting or rutting of the floor.
6. Easy and inexpensive to maintain—only regular cleaning and periodic waxing are required to maintain their excellent appearance.

Non-Slip—A lasting non-slip surface can be produced on a Colored Masterplate Floor by special finishing. (See specifications.)

Where Used—Millions of square feet of Colored Masterplate Floors are in service in industrial plants, stores, hospitals, schools, service stations, power plants, churches, garages, bottling plants, recreation rooms and similar installations. They are recommended wherever floor beauty, durability, economy and cleanliness are factors.

*After hardening, they can be economically scored to many pleasing patterns with a portable saw fitted with a carborundum wheel.

CONCRETE FLOORS

Specifications

TILE RED, PERSIAN RED, MAROON, BROWN, TERRA COTTA, BATTLESHIP GREY, DARTMOUTH GREEN AND BLACK.

All floor areas . . . (as indicated) shall be constructed and hardened with a mixture consisting of 2 parts of Masterplate and 1 part of cement* by weight, using 1 to 1¼ pounds of (Insert Color desired) Masterplate per square foot in strict accordance with directions furnished by the manufacturer, The Master Builders Company—Cleveland, Ohio—Toronto, Ontario.

*For Nile Green, French Grey and Tan use 4 parts of Masterplate and 3 parts of cement by weight.

KUROKROME . . . For Curing and Finishing Colored Concrete Floors.

Two-purpose pigmented membrane curing compound for colored concrete floors. Gives effective curing and surface finish in one application. Enhances color uniformity; polishes to a semi-gloss finish. For interior floors only. Kurokromed floors should be maintained with Colorwax (See page 13).

Colors: Tile Red, Maroon, Persian Red, Terra Cotta, Tan, Black, Brown, French Grey, Nile Green, Dartmouth Green, Battleship Grey.

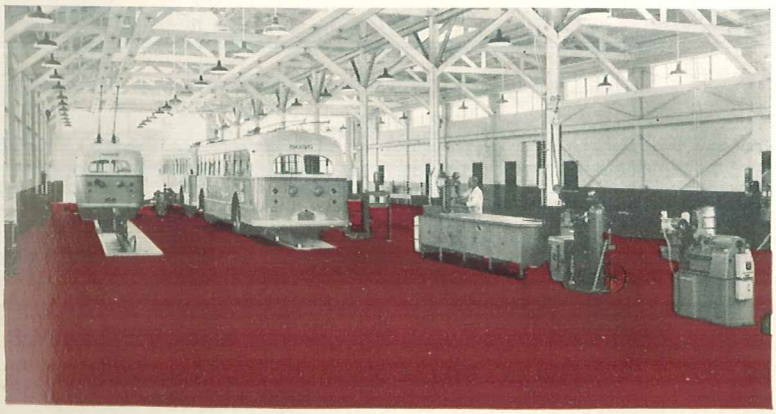
SPECIFICATIONS

As soon as the floor is hard enough to work on without marring, the surface shall be evenly coated with MASTER BUILDERS COMPANY Kuro-Krome, of the same color as the floor (insert color), in strict accordance with manufacturer's directions.

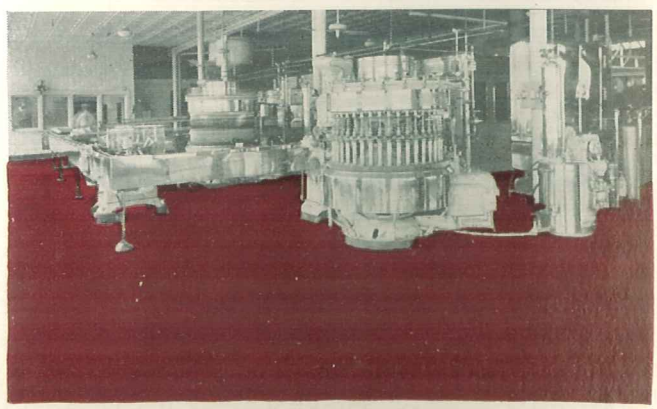
Typical Colored Masterplate Floors

International Harvester Co. (Fred J. Green Co.) Live Oak, Florida—Display room and parts department.

Sears, Roebuck & Company, Boston, Mass. Archt.—Nimmons, Carr & Wright, Chicago, Ill. Contr.—Turner Construction Co., Boston, Mass.



Los Angeles Transit Lines Service Bldg., Los Angeles, Calif. Archt.—Owners. Contr.—J. A. McNeil Co., Los Angeles, Calif.



Coca Cola Plant, Ft. Worth, Texas. Archt.—P. M. Geren; Gen. Contr.—J. M. Gurley & Son Constr. Co.; Floor installed by Palmer & Adams—all of Ft. Worth, Texas.

MASTERKURE... MASTERTEX.

MasterKure . . . for Membrane Curing of Concrete . . .

Curing is one of the most important stages of concrete making. If the curing is not done thoroughly, all the precautions taken in materials, methods, and costly supervision are wasted. Inadequate curing may result in the loss of as much as 40% of the strength. MasterKure is a solution of a synthetic resin and water-resistant compounds in an organic solvent. This solution spreads readily on wet concrete and deposits a hard, tenacious film which holds the moisture in the concrete.

MasterKure is a liquid, applied with brush or spray as soon after finishing as surface has set sufficiently to prevent injury.

Advantages

MasterKure eliminates the use of burlap, paper, sand, sawdust, straw and other less certain and often more costly curing methods. When used on floors, it protects against dirt, and the stains of plaster droppings.

In curing efficiency, the MasterKure "Membrane Curing Method" assures more thorough and complete curing of floors and slab concrete than any other practical means except ponding.

Applications

Among the more common applications that have proved the value of curing concrete by the MasterKure membrane method are: floors, highways, bridges, buildings, dams and walls.

Two Types

MasterKure No. 1 and MasterKure No. 2—both equally effective in curing action: No. 1 is colorless and is easily removed prior to waxing a colored floor. No. 2 may take on a yellowish cast with age; it is not as easily removable.

Mastertex . . . Cement Base Paint . . .

Mastertex is a water-resisting cement-base paint which protects and decorates exterior and interior surfaces of concrete, concrete block, brick, tile, stucco and other masonry. Can be applied directly to any of these surfaces. (Mastertex complies with Federal Specification—TT-P-21, Type II, Class A.)

An outstanding feature of Mastertex is the fact that it now contains Master Builders cement dispersing agent. Cement dispersion increases the durability of the hardened paint, particularly with respect to its resistance to checking.

Mastertex is distinguished from most other cement-base coatings by its stearate content, which gives the Mastertex finish minimum absorption and causes it to stay cleaner longer.

Mastertex is applied to a wet surface, forms a strong mechanical bond, can be brushed or washed repeatedly and has the distinctive feature of allowing the underneath concrete to "breathe." This prevents building up of water behind the film which causes blistering and peeling of oil, glue, casein and other non-breathing coatings.

General Specification

All surfaces as indicated on plans shall be given two coats of Master Builders Mastertex, cement-base paint, following the directions of the manufacturer, The Master Builders Company, Cleveland, Ohio.

Applications

The Mastertex type of coating (cement base) is highly recommended as the only satisfactory treatment for interior of basement walls, concrete block, on swimming pools, garden pools, tanks, tunnels, and other masonry surfaces subjected to constant or intermittent moisture. Also recommended for inside white on porous masonry surfaces in dairies, laundries, and other places subject to steam, fumes and high humidity.

Standard Colors: White, Cream, Ivory, Green, Blue, Light Grey, French Grey, Dark Grey.

Pictorial directions for use on request.

This photo shows what can happen to oil paints which are applied on masonry surfaces. Mastertex contains no oil, glue, or casein—it will not flake, blister or peel. Mastertex bonds firmly to any clean, porous, masonry surface.

APPLYING MASTERKURE

SPRAYING METHOD BRUSH METHOD

Specifications

After the form is removed or when the surface is set sufficiently hard so that it will not be marred by the application, all concrete, floors, etc., shall be cured by the Master Builders Company Membrane Method with MASTERKURE (indicate No. 1 or No. 2, also whether for spraying or brush method) in strict accordance with the directions furnished by the manufacturer.

COLORWAX

Colorwax, which develops the full color and beauty of a floor, is especially made for use on Colored Masterplate, tile, terrazzo and all colored concrete floors, particularly in maintaining effect of Kuro-Krome finish (see page 11). It combines the highest quality wax with the finest stable colors. Very economical to use because of greater covering capacity.

Colorwax protects the surface from traffic wear and gives an otherwise harsh floor a pleasant, "soft" feeling underfoot. Filling and sealing the pores with a water and stain-resistant film, Colorwax helps keep the surface clean and makes upkeep simple and inexpensive.

In addition to its wide use on hard-surface floors, Colorwax provides a protective and beautifying coating for linoleum, cork, composition, asphalt tile, rubber and other semi-soft type floorings. Unlike certain chemical preparations, Colorwax contains no ingredients that can soften or injure these materials.

Made in ten standard colors: also non-colored. (Complete directions sent upon request.)

MASTERSEAL . . . For Colorless Surface Coating

Masterseal seals pores of brick, tile, stucco and concrete without materially changing the appearance of the surface, producing a surface that is non-absorbent and corrosion-resistant. It retards disintegration, resists the corrosive action of smoke and fumes, checks staining and efflorescence.

Two types of Masterseal are available. Masterseal No. 1 is produced from a solid hydro-carbon base which is alkali and acid resistant. It is distinguished from Masterseal No. 2 by its greater penetration, greater water-repellency and greater durability. No. 1 darkens the surface slightly but is longer lived; No. 2 does not appreciably affect the color or tone of the surface. Both can be applied to clean, dry, frost-free surfaces down to 50° F. with full efficiency. (Complete directions sent upon request.)

MASTER MIX . . . For Hardening Floor Slabs by Chemical, Integral Method

At a cost no greater than surface treatments, Master Mix hardens, densifies floor topping throughout, and converts the solubles where disintegration starts. Providing resistance to corrosion, Master Mix is important for floors in process industries.

Master Mix makes "dry" mixes easily placeable with 15% less water, because of cement dispersion, trowels easily to an excellent finish with a minimum of labor, and produces strong, dense concrete with minimum shrinkage.

In Master Mix, the Omicron ingredient adds strength to the wearing finish and increases its resistance to the corrosive attacks of acid and alkali solutions.

Specifications

Concrete floor areas (indicate areas) shall be hardened and finished with Master Builders Co. Master Mix in the proportions of 1½ lbs. of Master Mix per sack of cement used in the mix in exact accordance with directions of manufacturer.

Non-Shrink EMBECO.

Non-Shrink EMBECO . . .

Non-Shrink Embeco is a dry powder compound composed mainly of specially prepared metallic aggregate and Master Builders' cement dispersing agent and reagents to promote oxidation and strength. Added to concrete or mortars it counteracts shrinkage.

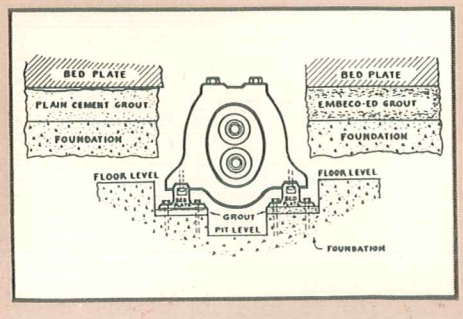
For GROUTING . . .

The excess water required to make a normal mix sufficiently *flowable* for most grouting jobs causes: (1) serious shrinkage (2) slow set (3) low strength (4) extreme grout cavitation because of excess bleeding.

With Embeco these disadvantages of ordinary grouts are overcome because: (1) Cement Dispersion in Embeco produces greater placeability even though water content is reduced up to 15% (2) when mixed with sand, cement and water Embeco expands just enough to produce densification of the grout and sufficient pressure to make a complete, level contact. Other advantages of Embeco grout:

1. It is quick-setting, permitting the operation of equipment at the end of 12 hours if necessary.
2. It develops high strengths in 24 hours: greater than ordinary grouts in 7 days . . . ultimately 51% greater.
3. It is oil and water resistant.

Cross-section shows how slight expansion of Embeco Grout results in complete contact with bedplate.



For SETTING HEAVY FLOORTILE . . .

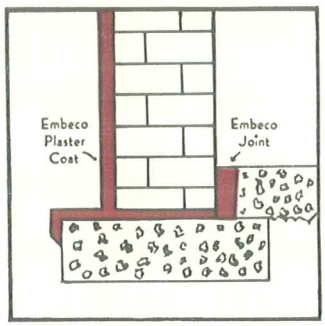
Non-Shrink Embeco Mortar is widely used to grout heavy industrial tile, quarry tile, vitrified brick, deck tile and other types of exposed floor tile units. It completely eliminates shrinkage of mortar joint and densifies mortar, thus preventing seepage of moisture and corrosive liquids into mortar and between mortar and tile. On Architectural Work as verandas, terraces, roof-decks and other suspended slabs — resists leakage into substructure. For Industrial Work, dairies, bakeries, bottling plants, meat packing houses—confines corrosion to surface, insuring long floor life. Procedure and specifications sent on request.

For FLOOR CONSTRUCTION . . .

Thorough bonding of the topping course, when placing a new floor or resurfacing an old one, can be insured by brushing into the surface of the rough slab, a slush bond coat of Embeco. Non-Shrink Embeco also recommended for topping course. See drawing page 9. (Detailed information sent on request.)

The joint between floor slab and walls is one of the greatest sources of leaks. The concrete slab shrinks and pulls away from the walls, leaving an easy entrance for water. This may be avoided at the time of construction by filling these joints (illustration below) with Non-Shrink Embeco Mortar. (Specification below.)

Plaster Coat Method . . .



By adding Non - Shrink Embeco to the cement plaster coat on exterior foundation walls, a tight coating is obtained which resists leakage and which is the most lasting and efficient protection against leaky basements. (Specifications below.)

For CONCRETE REINTEGRATION . . .

Non-Shrink Embeco is used in the rebuilding of spalled and eroded concrete surfaces. Since Embeco overcomes the natural shrinkage in patching concrete, the restored areas stand firm, resistant to the elements. Send for detailed specification.

Specifications

(a) EMBECO PLASTER COAT—All exterior surfaces (or interior, as conditions dictate) of foundation walls and footings below grade shall be pargeted with not less than ½ in. of mortar, consisting by volume of: 1 sack portland cement, 3 cu. ft. sand to which not less than 25 lbs. of Non-Shrink Embeco Aggregate shall be added per each sack of cement.

(b) GROUTING EMBECO JOINT AT FLOOR LINE—Junctures between basement concrete floor line and foundation walls shall be grouted with a mixture of: 100 lbs. Embeco, 2 sacks portland cement, 3 cu. ft. sand.

(c) For PROTECTING Concrete, Haydite or Cinder Block against water—The surface shall be prepared and an Embeco mixture shall be brushed on according to directions of manufacturer, THE MASTER BUILDERS CO., CLEVELAND. (For description see page 15 . . . EMBECO No. 5—Metallic Waterproofing.)

OTHER MASTER BUILDERS' PRODUCTS

EMBECO No. 5 . . .

METALLIC METHOD

For Reducing Permeability

. . . Brush Coat Type for Application to Concrete and Masonry Surfaces, Interior and Exterior.

Embeco No. 5 consists of an approved, pure, finely ground metallic aggregate, combined with an oxidation catalyst which is free from ammonia. This is important because fumes from the ammonia used in some products affect the workmen, which slows down the job. Successive brush coats (normally four coats) are applied, alternating Embeco No. 5 mixed with sufficient water to produce a brushable consistency, and a mixture of portland cement, Embeco No. 5 and fine aggregate. The iron in the mixture oxidizes and expands, filling the voids left by the water as it evaporates. This provides a metallic-cement sheath which tightly bonds to the surface and checks passage of water even under heavy pressure.

Like Mastertex, Embeco No. 5 (metallic method) has two distinct features: it can be applied to a wet surface, and it allows the concrete to "breathe." By permitting passage of vapor from the underneath concrete, Embeco No. 5 prevents collection of liquid behind the metallic-cement sheath which eventually forces off the coating. This is a common problem with non-breathing type materials.

Embeco No. 5 method is one of the most economical because of the low first cost and long life of the application.

Specifications

All masonry surfaces (indicate areas) shall be treated with (indicate number of coats) Master Builders Co. Embeco No. 5 used and applied in exact accordance with directions of manufacturer.

STEAROX "100". . .

Stearate Type Integral Treatment for Mass Concrete and Mortars.

Stearox "100" (Powder), used to render pores water-repellent, contains 100% stearic acid. Because of its concentrated form, "100" assures maximum efficiency and economy.

Specifications

Stearox "100" shall be added in the proportion of .2 lb. per sack of cement, exactly in accordance with the directions of manufacturer, THE MASTER BUILDERS CO.

CONCRETE PRESERVATIVE . . . Protective Coating for Concrete and Mortar

Protects concrete from the attack of reagents which ordinarily cause rapid deterioration, such as solutions of alkalies, acids and salts. It is a moderately viscous amber solution of a non-volatile synthetic base, which, when applied on any dry concrete surface, penetrates and fills the pores with a corrosion resistant having greatly reduced permeability. An excellent alkali-resisting priming coat for oil paints where used on concrete or masonry. Forms a strong bond between paint and concrete, prevents blistering and peeling. Concrete Preservative is recommended for applications to all concrete exposed to severe corrosive conditions, such as floors in food manufacturing plants, bakeries, laundries, concrete tanks and vats, sewers, silos, bottling plants.

Specifications

Concrete floor (indicate areas) shall be treated with Master Builders Co. Concrete Preservative. To be applied direct from can with brush, after removing all surface dust, scale, etc., in exact accordance with directions of manufacturer. Surface may be used on following day or not less than 12 hours following application.

SANISEAL . . . Chemical Hardener for Floors Already Installed.

An effective chemical hardener, which when mixed with water and brushed into the floor surface, deposits in the pores a hard, wear-resisting crystal. This arrests dusting and hardens the surface.

Saniseal is designed as a maintenance or corrective treatment for floors already installed. Not less than 2 lbs. of Saniseal should be used per 100 sq. ft.

Specifications

All concrete (or terrazzo) floors, after they have been cured and dried, shall be treated with Master Builders Co. Saniseal, used in exact accordance with directions of manufacturer.

INFORMATION FILMS

The film "Concrete Facts" tells the story of cement dispersion, an outstanding development that improves all concrete properties. It explains pictorially the action and benefits of both cement dispersion and air entrainment.

"The Story of Slab 37," another Master Builders' information film, tells about the development, features, and method of applying Masterplate—industry's toughest concrete floor.

Both films are available for private showing to interested groups of any size. Write for complete information.

FIELD SERVICE: Master Builders' thoroughly trained field representatives are located in all principal cities. We invite you to call on one of these men whenever confronted with a problem related to concrete and mortar.

MASTER BUILDERS BRANCH OFFICES

ALABAMA
Homewood, 901 Oxmoor Rd., Apt. 19-B
Telephone: 2-7657

CALIFORNIA
Los Angeles 21, 1340 E. 6th St.
Telephone: Van Dyke 1619
Tucker 6650

COLORADO
Denver, 1127 Adams St.
Telephone: Fremont 5645

CONNECTICUT
Stratford, 1691 North Avenue
Telephone: Bridgeport 7-2249

FLORIDA
Umatilla, Box 92
Telephone: 2822

GEORGIA
Atlanta 3, 205 Luckie St., N.W.
Telephone: Alpine 3494

ILLINOIS
Chicago 1, 228 No. LaSalle St.
Telephone: State 2-4175
Rock Island, 2964 15th Avenue
Telephone: 3119

INDIANA
Indianapolis 4,
1039 N. Pennsylvania Ave.
Telephone: Riley 7878

IOWA
Davenport, 2131 Vine Street
Telephone: 7-6615
Des Moines, 3321 S.W. 13 St. Pl.
Telephone: 4-7857

MARYLAND
Baltimore 18, 13 W. 25th St.
Telephone: Belmont 8740

MASSACHUSETTS
Boston 16, 80 Boylston St.
Telephone: Liberty 2-3351

MICHIGAN
Detroit 26, 600 Michigan Bldg.
Telephone: WO 1-1246

MINNESOTA
St. Paul 3, 11 Como Avenue
Telephone: Cedar 6547

MISSISSIPPI
Jackson 103,
148 Millsaps, P.O. 326
Telephone: 4-7688

MISSOURI
Kansas City 5,
8004 Washington Avenue
Telephone: Hiland 7079

NEW YORK
Buffalo 1, 154 W. Huron St.
Telephone: Cleveland 5410
New York 17, 101 Park Avenue
Telephone: Murray Hill 6-1190

NORTH CAROLINA
Charlotte 7, 2010 Crescent Ave.
Telephone: 5-5897

OHIO
Columbus, 387 East Broad St.
Telephone: Fletcher 2427

PENNSYLVANIA
Philadelphia 8, 401 N. Broad St.
Telephone: Walnut 2-8580
Pittsburgh 19, 304 Ross St.
Telephone: Grant 1-9580

TEXAS
Dallas 1, 103 Thomas Building
Telephone: Riverside 1053
Houston, 1539 Vermont St.
Telephone: Linden 4872

WASHINGTON
Seattle 11, 901 Fairview Ave., N.
Telephone: Main 2900

WISCONSIN
Milwaukee 8, 4738 W. Lisbon St.
Telephone: Hopkins 2-4640

CANADA
Toronto, Ontario
1107 Millwood Rd., Leaside
Telephone: Hyland 1193
Montreal, Quebec
1434 St. Catherine St. W.
Telephone: Harbour 6321

REPRESENTATIVES

ALABAMA
Mobile
Reliance Equipment Co.
Montgomery
The Morton Sales Company, Inc.

ARIZONA
Phoenix
Superior Sand & Gravel Co.

ARKANSAS
Fort Smith
Harry G. Barr Co.
Little Rock
Nevil C. Withrow Co.

CALIFORNIA
San Francisco
Rolph, Mills & Co.

COLORADO
Denver
Colorado Builders Supply Co.
Pueblo
Fountain Sand & Gravel Co.

CONNECTICUT
Bridgeport
Homer C. Godfrey Co.

DISTRICT OF COLUMBIA
Washington
A. P. Woodson Co.

FLORIDA
Jacksonville
Geo. P. Coyle
Miami Beach
Maule Industries, Inc.
Orlando
Finfrock Industries, Inc.
Pensacola
Concrete Supply Co.
St. Petersburg
E. L. March
Tallahassee
Leon Builders Supply Co.
Tampa
I. W. Phillips & Co.
W. Palm Beach
Burnup & Sims Co.

GEORGIA
Augusta
Augusta Building Supply Co.
Savannah
John G. Butler Company

ILLINOIS
Moline
Moline Consumers Co.

INDIANA
Evansville
John L. Newman, Inc.
Ft. Wayne
Old Fort Supply Co.
Indianapolis
Spickelmeir Co.
Kokomo
Hansell Coal Co.
Lafayette
Kemmer Builders Supply Co.
South Bend
E. R. Newland Co., Inc.
Terre Haute
Reiman Lime & Cement Co.

IOWA
Cedar Rapids
Kings Crown Plaster Co.
Davenport
Austin Crabbs Inc.
Des Moines
A. J. Crawford
Dubuque
Conlons
Sioux City
Eugene F. Wilsey Co.

KANSAS
Kansas City
Claude Cooke
Wichita
Allen's, Inc.

KENTUCKY
Ashland
Middle States Concrete Co., Inc.
Lexington
Clay-Ingels Co.
Louisville
American Builders Sup. Co., Inc.
Paducah
Geo. W. Katterjohn Co.

LOUISIANA
Alexandria
F. A. Flynn
New Orleans
C. A. King, Jr.
Shreveport
Builders Supply Co., Inc.

MARYLAND
Baltimore
Pen-Mar Company
Cumberland
Cumberland Cement & Sup. Co.
Hagerstown
Victor Cushwa & Sons, Inc.
Salisbury
Booth Building Specialties

MASSACHUSETTS
Boston
J. P. O'Connell Co.
Wm. S. Simpson, Inc.
Springfield
Warren F. Hoye, Inc.
Worcester
Kesseli & Morse Co.

MICHIGAN
Flint
W. C. Dover & Co.
Grand Rapids
Grand Rapids Screen Co.
Kalamazoo
Miller Lumber Co.
Lansing
The Briggs Co.
Muskegon
Muskegon Building Materials Co.

MINNESOTA
Minneapolis
Frank P. White Co.

MISSISSIPPI
Jackson
The Fred Thrasher Co.

MISSOURI
St. Louis
Lange-Schmidt Co.

MONTANA
Butte
Archie W. Adams
Helena
Builders Supply Co.

NEBRASKA
Omaha
Earl S. Lewis & Co.
Scottsbluff
Building Specialties Co.

NEVADA
Las Vegas
Las Vegas Building Materials Co.

NEW JERSEY
Clifton
Campbell Morrell & Co.
Linden
Thorn-Wilmerding Co.
Newark
F. Bowden

NEW MEXICO
Albuquerque
Cobusco Steel Products

NEW YORK
Binghamton
Binghamton Slag & Roofing Co.
Elmira
Harris, McHenry & Baker Co.
Jamestown
Lakewood Supply, Inc.
Niagara Falls
Empire Builders Supply Co.
Rochester
Hutchison-Rathbun, Inc.
Schenectady
Grimm Bldg. Material Co., Inc.
Syracuse
Paragon Supply, Inc.
Tarrytown
Cooney Brothers
Utica
American Hard Wall Plaster Co.

NORTH CAROLINA
Asheville
Reed & Abee, Inc.
Charlotte
Tucker-Kirby Co., Inc.
Dunn
Godwin Builders Supply Co.
Durham
Constructors Supply Company
Goldsboro
Builders Supply Co.
Greensboro
F. D. Lewis & Son
Raleigh
Ready Mixed Concrete Company
Wilmington
S & G Concrete Company
Winston-Salem
B & L Ready Mix Concrete Co.

OHIO
Akron
The J. P. Loomis Coal & Sup.Co.
Barberton
Stuver Bros. Co.
Bellaire
Buckeye Sand & Supply Co.
Canton
Hursh & Schory Coal Co.
Cincinnati
Cinder Products Co., Inc.
Columbus
Howard S. Sterner Co.
Elyria
West Side Lumber Co.
Springfield
The Beckley & Myers Co.
Toledo
Kuhlman Builders Supply Co.
Youngstown
Youngstown Building Material & Fuel Co.

OKLAHOMA
Oklahoma City
Bissell Builders Supply Co.
Tulsa
Bissell Builders Supply Co.

OREGON
Portland
McCraken-Ripley Company

PENNSYLVANIA
Aliquippa
P. M. Moore Co.
Beaver Falls
Frank Rieser & Sons
Bradford
E. W. Bisett & Son
Brownsville
Brownsville Constr. Co., Inc.
Dubois
John A. Kohlhepp & Sons
Erie
B. Schafer Wholesale Co., Inc.
Harrisburg
Pennsylvania Supply Co.
Hershey
Hershey Lumber Co.
Johnstown
John W. Walters Co.
Lancaster
J. C. Budding Co.
Latrobe
Pohland Brothers
Lebanon
Lebanon Ready Mix ConcreteCo.
Lewistown
James R. Kline's Sons
Meadville
City Coal & Supply Co.
Pittsburgh
McCrady-Rodgers Co.
Scranton
Scranton Ready-Mix Concrete Co.
Wilkes-Barre
Wm. H. Pierce
Williamsport
Cement Products Co.
York
Service Supply Co.

RHODE ISLAND
Providence
H. R. Horton Co.

SOUTH CAROLINA
Charleston
Van Smith Building Material Co.
Columbia
Hardaway Contracting Co.
Greenville
J. C. Plowden
Orangeburg
Wanwell Supply Co.
Sumter
Sumter Concrete Company

SOUTH DAKOTA
Sioux Falls
George H. Brown

TENNESSEE
Knoxville
Harris Supply Corp.
Memphis
John A. Denie's Sons Co.
Nashville
T. L. Herbert & Sons
Wilson-Weesner-Wilkinson Co.

TEXAS
Abilene
Creel & Childs Ready Mix Concrete
Amarillo
Crowe-Gulde Cement Co.
Dallas
Macatee, Inc.
El Paso
Booker-Walker Supply Co.
Fort Worth
Fort Worth Sand & Gravel Co.
Harlingen
Valley Ready Mix Concrete Co.
Houston
A. M. Bowles
Longview
Builders Supply Co. of Longview
Lubbock
Lubbock Building Products
Marshall
Logan & Whaley
Odessa
West Texas Concrete Products, Inc.
San Antonio
Rufus A. Walker
Waco
Oscar F. Moore Co.

UTAH
Salt Lake City
Cobusco Steel Products

VIRGINIA
Lynchburg
Campbell-Payne, Inc.
Norfolk
Batchelder & Collins
Portsmouth
Geo. T. McLean Co., Inc.
Richmond
Ruffin & Payne, Inc.
Roanoke
C. Grady Cates

WEST VIRGINIA
Bluefield
Citizens Coal & Supply Co.
Charleston
Oscar F. Henry & Co.
Morgantown
McClain Sand Company
Parkersburg
Parkersburg Ice & Fuel Co.
Wheeling
H. L. Seabright Co.

WISCONSIN
Green Bay
Gagnon Clay Products Co.
LaCrosse
Louis E. Meir
Madison
Findorff Lumber & Supply Co.
Milwaukee
Wauwatosa Fuel & Supply Co.

WYOMING
Casper
Colorado Builders Supply Co.

CANADA
Calgary, Alberta
Alberta Transit Mix Concrete Co.
Edmonton, Alberta
C. W. Carry, Ltd.
Vancouver, B. C.
Geo. W. Moore & Co., Ltd.
The O'Neil Co., Ltd.
Victoria, B. C.
Wm. N. O'Neil Co., Ltd.
Winnipeg, Manitoba
Cowin & Co., Ltd.
St. John, Newfoundland
Horwood Lumber Co., Limited
Halifax, N. S.
W. H. Noonan
Hamilton, Ontario
Howard Construction Materials
Kirkland Lake, Ontario
Hill-Clark-Francis, Ltd.
London, Ontario
E. H. Arnold
New Liskeard, Ontario
Hill-Clark-Francis, Ltd.
Ottawa, Ontario
Webster & Sons, Ltd.
Port Arthur, Ontario
W. V. Barker & Co., Ltd.
St. Catherines, Ontario
Transit Mixed Concrete, Limited
Sudbury, Ontario
Hill-Clark-Francis, Ltd.
Timmins, Ontario
Hill-Clark-Francis, Ltd.
Windsor, Ontario
Ryan Builders Supplies, Limited
Bourlamaque, Quebec
Hill-Clark-Francis, Ltd.
Noranda, Quebec
Hill-Clark-Francis, Ltd.
Quebec, Province of Quebec
Webster & Sons, Ltd.
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